

**SHELLS OF *PHYSA GYRINA* (GASTROPODA:  
PHYSIDAE) OBSERVED AS SUBSTITUTE CASE-  
MAKING MATERIAL BY *GLOSSOSOMA*  
*INTERMEDIUM* (TRICHOPTERA:  
GLOSSOSOMATIDAE)<sup>1</sup>**

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**ABSTRACT:** A specimen of *Glossosoma intermedium* (Klapálek) was collected that had incorporated snail shells into its last instar case.

Incorporation of mollusc shells as case-making material by Trichoptera has been previously reported. Such usage is primarily restricted to selected species in the family Limnephilidae. For example, *Philarctus quaeris* uses snails and sphaeriid clams for all or part of its case; and *Grensia praeterita* apparently incorporates operculars of prosobranch snails into its case (Wiggins, 1977). Species in the family Glossosomatidae normally construct portable saddle-cases composed of rock fragments of fairly uniform size (Wiggins, 1977). However, we have collected an anomaly to the standard case, in which a last instar *Glossosoma intermedium* (Trichoptera: Glossosomatidae) (Klapalek) incorporated three shells of *Physa gyrina* (Gastropoda: Physidae) into its case (Figure 1).

The specimen was collected on 12 February 1980 from Trout Park Nature Preserve, a relic spring-fed brook system in Elgin, Illinois. This is the only locality in Illinois where *Glossosoma intermedium* supposedly occurs (Ross, 1944); and in portions of the brooks the cobble substrates are literally covered with them. Their abundance in this system lends further support to the rarity of snail shells as case material in glossosomatids. To date we have closely scrutinized thousands of *G. intermedium* in the field and have only collected the one specimen using snail shells. Pennak (1978) states that members of a caddisfly species will usually select the same material and construct their case in the same way, but will substitute materials if the normal case-making material is not available. In the Trout Park brooks more than adequate case-making rocks are available, even considering the large numbers of *Glossosoma* inhabiting the streams.

The majority of *G. intermedium* at Trout Park construct their cases from granules of miscellaneous metamorphic rocks, e.g. granite gneisses and quartzites. In some localities, especially lower velocity portions of the brooks, some cases are composed of unaltered and clastic limestones, e.g.

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tufa, marl and coquina fragments. The anomalous case we collected was composed primarily of limestone fragments as well as the three snail shells. The specimen was collected adjacent to the main stream channel on a submerged piece of wood; water depth was approximately 5 cm. Current velocity was reduced in this area and the substrate was predominantly sand-silt. However, other *G. intermedium* observed in the area did not have snail shells incorporated on their cases. Although the shells were empty upon collection, it cannot be concluded whether the caddisfly used empty shells or living snails. Aggregates of dead snails have not been observed, while live snails are fairly dense, often occurring in conjunction with *G. intermedium*. This would have allowed the caddisfly to gather three snails within close proximity of each other. The weight of the empty shells (~0.005g) is approximately that of the rock fragments normally incorporated into late instar cases, while living snails weigh twice this amount. The use of snail shells does not seem to add to the streamlining of the case, but could provide protection from potential predation in much the same manner as rock fragments.

#### ACKNOWLEDGEMENTS

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#### LITERATURE CITED

- Pennak, R.W. 1978. Fresh-water invertebrates of the United States. Second edition. John Wiley & Sons, New York. 803 p.
- Ross, H.H. 1944. The caddis flies, or Trichoptera, of Illinois. Bull. Illinois Natural History Survey, 23(1): 1-326.
- Wiggins, G.B. 1977. Larvae of the North American caddisfly genera (Trichoptera). University of Toronto Press, Toronto, 401 p.
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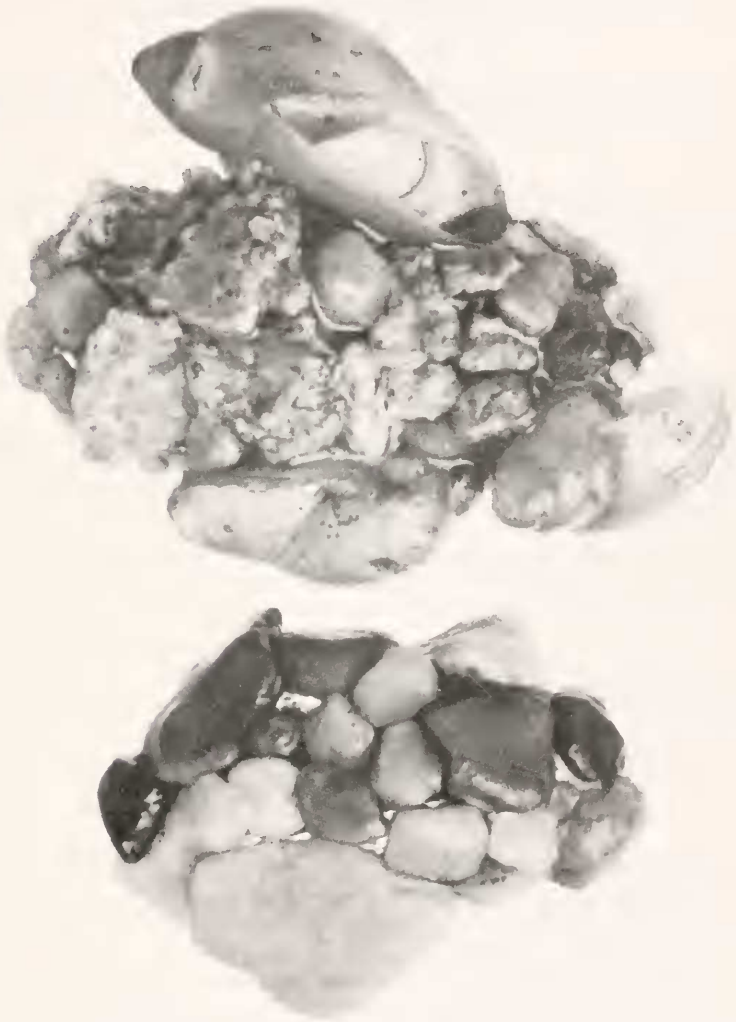


Figure 1. Anomalous *Glossosoma intermedium* case (incorporating three *Physa gyrina* shells) contrasted to normal case. Case length 7.5 mm. Both cases contained a prepupa.